Comparative Analysis of Health Issues in Children from Rural and Urban Areas of Purnea District: Examining Nutritional Deficiencies, Infectious Diseases, and Chronic Health Conditions

A Synopsis / Research Proposal

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State of the Art:

Childhood is the optimal period for assessing health status and taking proactive measures. This stage of life is crucial for establishing healthy dietary habits and nutritional practices, which can benefit a child throughout their life. By addressing nutritional needs early on, we can enhance overall health and contribute to the well-being of future generations (Dasgupta et al 2017).

Health is one of the fundamental rights. It is state of complete, physical, mental and social wellbeing and not merely absence of disease. Provision of safe water, sanitary disposal of human wastes, hygienic and balanced diet and adequate healthy housing are the bare essentials for health, low levels of disease and increased span of life. Health is the most essential commodity for human efficiency and happiness. It is a positive concept emphasizing social and personal resources as well as physical capacity (Goyal and Gupta, 2012).

Nutritional status also reflects an individual's health as influenced by nutrient utilization. It can be assessed through physical measurements, clinical examinations, and laboratory tests. Oral health, in particular, is significantly impacted by diet and overall nutrition. The mouth often serves as an early indicator of general health and nutritional status. Mineralization of permanent teeth occurs from birth until approximately ages 10 to 15. During this period, deficiencies in calcium, vitamin D, vitamin A, proteins, and calories can adversely affect dental health. Vitamins, essential organic micronutrients, must be included in the diet to support various bodily functions. Nutritional blindness, such as xerophthalmia, remains a significant public health issue among children in India. Different organs require a range of nutrients to maintain health; no single nutrient can substitute for the diverse functions of various nutrients. The optimal approach to maintaining organ health is through a balanced diet rich in multiple nutrients. Vitamin D deficiency is particularly prevalent among very young infants, especially those born with low birth weights, and often results from inadequate dietary intake and limited sunlight exposure (Srilakshmi 2024).

Recent studies have identified significant health issues among children, particularly in low- and middle-income countries (LMICs). These issues include both undernutrition (such as stunting and wasting) and overnutrition (like obesity). Widespread micronutrient deficiencies, especially anemia, are also a concern. Addressing these problems is challenging because current nutritional programs often overlook this age group, focusing instead on younger children or adolescents. This gap highlights the need for more targeted and comprehensive interventions to meet the specific nutritional needs of school-age children in these regions (Wrottesley et al. 2023).

Health is related to the food consumed and food is a prime necessity of life. Correct amount of nutrient is essential to maintain good health. Deficiency of any nutrient affects health of an individual. Food is a mixture of many different chemical components. Every culture has its own dietary pattern based on the use of various sources. The basic food patterns followed by our ancestors have been largely adequate as evident from the fact that man has survive for thousands of

years. But as a result of modern innovations resulting from technology and urbanization food patterns have changed. Poor nutrition also affects longevity. The mortality rates of young children are very high among the poor as compare to urban area, because of improved sanitation and better medical facilities. Severe malnutrition in early children also affects the intellectual development (Rajalakshmi, 1990).

The school-aged children in low- and middle-income countries face a dual burden of malnutrition, characterized by both under nutrition (stunting and wasting) and over nutrition (obesity). Micronutrient deficiencies, especially iron deficiency anemia, are widespread, particularly in regions like South Asia and Sub-Saharan Africa. Inadequate dietary intake, such as low consumption of fruits and vegetables, contributes to these nutritional issues, while sedentary lifestyles and high-calorie diets drive rising obesity rates, especially in urban areas (Jose and Andrew 2023).

Research has identified various nutritional challenges in young children. Venter et al. (2006) highlighted common food allergens such as cow's milk, eggs, wheat, and peanuts in toddlers. Echoka (2008) linked poor skeletal growth in children to future osteoporosis. Weaver and Steiner (1984) emphasized the role of insufficient fluid and fiber intake in childhood constipation. Morgan (2005) discussed the impacts of food intolerance, inactive lifestyles, and poor dietary choices on children's health, including dental caries, obesity, and constipation. Aggett et al. (2002) and Moynihan and Petersen (2004) noted the crucial role of iron in neuro-cognitive development and the effects of acidic foods on dental health. Jotangia (2005) and Dagnelie (1991) discussed the rising incidence of childhood obesity and the importance of proper dietary management for food allergies.

Problems to be Investigated:

Health status in children significantly affects their growth, development, and overall health. Given that recent data from the Poshan Tracker (December 2023) shows 36% of children under six are stunted, 17% are underweight, and 6% are wasted, there is an urgent need to focus on improving child nutrition. The health of children in Purnea district, located in Bihar, India, is influenced by a range of factors that vary significantly between rural and urban areas. This study aims to conduct a comparative analysis of health problems among children in these different settings, focusing on nutritional deficiencies, infectious diseases, and chronic conditions. Understanding these disparities is crucial for developing targeted health interventions and improving overall child health in the district.

Objectives of the Investigation:

- **To assess health problems and dietary patterns of children in both rural and urban areas.**
- **To examine the prevalence of infectious diseases, and chronic health conditions.**
- **To identify socio-economic and environmental factors that affect children's health in rural and urban areas.**

Motivation:

Ensuring that children receive a balanced diet is essential for their optimal growth and development. Along with a nutritious diet, regular physical activity and proper hydration are crucial. Monitoring children's growth regularly is important to ensure they are receiving adequate nutrition. Children need sufficient calories daily, which should be obtained from a variety of nutrient-dense foods.

Research questions

1. What are the common health issues, typical dietary patterns and food consumption frequencies including rates of nutritional deficiencies affecting children in rural versus urban areas?
2. What is the prevalence of common infectious diseases (e.g., malaria, diarrhea, respiratory infections) and chronic health conditions (e.g., asthma, diabetes, and obesity) among children in rural versus urban areas?
3. How do common socio-economic challenges and key environmental factors (e.g., sanitation, pollution, access to clean water, housing quality and access to safe recreational spaces) impacting children's health in rural versus urban areas?

RESEARCH DESIGN AND METHODOLOGY

Following methodology will be adopted for successful implementation of the research.

Type of research

Surveys, health records, interviews, and focus groups to gather data on health conditions, dietary patterns, and socio-economic factors.

Selection of study location and selection of sample

A total of 200 children aged below 19 years will be selected purposively from Christian Medical Centre and Hospital, Belouri, Purnea District.

Dependent and independent variables

Dependent Variables will be

1. **Nutritional Deficiencies:**
    - Prevalence of specific deficiencies (e.g., anaemia, vitamin D deficiency)
    - Levels of essential nutrients (e.g., proteins, vitamins, minerals) in children
2. **Infectious Diseases:**
    - Prevalence of specific infectious diseases (e.g., malaria, diarrhoea, respiratory infections)
    - Rates of vaccination coverage
3. **Chronic Health Conditions:**
    - Prevalence of chronic conditions (e.g., asthma, diabetes, obesity)
    - Long-term impacts on health and quality of life

4. **Dietary Patterns:**
    - Typical dietary patterns and food consumption frequencies
    - Nutrient intake levels
5. **Barriers to Nutrition:**
    - Access to nutritious food and common barriers faced by families

Independent Variables will be

1. **Geographical Setting:**
    - Rural versus urban location
2. **Socio-Economic Factors:**
    - Family income levels
    - Parental education
    - Occupation
3. **Environmental Factors:**
    - Access to clean water
    - Sanitation and pollution levels
    - Housing quality and access to recreational spaces
4. **Healthcare Access:**
    - Availability and quality of healthcare services
    - Health insurance coverage
    - Access to preventive care and vaccinations
5. **Dietary Access:**
    - Availability of nutritious food
    - Food security status

Quantification of variable

The data will be analyzed using appropriate statistical tests.

Tools to be used in the collection of data

Data will be collected through structured interviews, clinical examinations, biochemical assessment and a 24-hour dietary recall method.

Instruments of data collection

An interview schedule will be prepared for collecting data. The reliability and validity of the interview schedule will be tested.

Methods of data collection

Data will be collected from the children with the help of

- Interview schedule
- Clinical examination
- 24 hours dietary recall method
- Biochemical assessment

Significance of the Study:

Early intervention can prevent long-term health issues and support optimal growth and development. By understanding the prevalent nutritional issues in this age group, effective policies and programs can be developed to promote balanced diets, encourage physical activity, and provide nutritional education to parents and caregivers. Improving the nutritional status of children will contribute to better health outcomes and overall quality of life.

Relevance to Present-Day Problems and Societal Needs:

Today's children are tomorrow's citizens, making it vital to ensure they receive proper healthcare and nutrition. Addressing the nutritional and developmental needs of children is crucial for the nation's future human resource development.

Contribution to Existing Knowledge:

This research will raise health awareness among parents and demonstrate the positive impact of healthy dietary practices on reducing nutritional deficiencies and related diseases in children.

Future Work:

Further studies should explore the sustainability of interventions and assess the success of existing guidelines. Future research could also expand to consider a broader age range.

Chapterization:

- Introduction
- Review of Literature
- Research Methodology
- Results and Discussion
- Summary and Conclusion

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